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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,317	09/24/2003	Hajime Funakoshi	Q77210	2321
23373	7590	05/11/2004	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			HERTZOG, ARDITH E	
			ART UNIT	PAPER NUMBER
			1754	

DATE MAILED: 05/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/668,317	FUNAKOSHI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Ardith E Hertzog	1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 18-52 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-52 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 10/053,674.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>09242003</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Priority/Response to Amendment*

1. This application is a division(al) of parent application 10/053,674, filed January 24, 2002, now US 6,682,713. Acknowledgment is made of applicant's claim for priority under 35 U.S.C. § 119(a)-(d); the certified copies of the corresponding foreign applications have been filed in said parent application. Applicant's preliminary amendment filed September 24, 2003 has been entered, and claims 18-52 are now pending.

### *Minor Informalities*

2. The title of the invention is not considered descriptive. A new title is required that is clearly indicative of the invention to which the claims in this divisional application are directed. While applicant is free to craft his own title, the following title is suggested: "IRON SULFIDE MIXTURES; IRON SULFIDE HEAVY METAL TREATING AGENTS; AND METHODS OF TREATING USING SUCH AGENTS".

3. The disclosure is objected to, because of the following minor informalities:

- a. In the first line of the specification (as amended), ", now US 6,682,713" should be inserted after "filed January 24, 2002".
- b. For proper Markush group language, in both independent claims 18 and 20, "the group consisting of" should be inserted after "selected from" (claim 18, line 1; claim 20, line 2), **and** before "(d)", "or" should be replaced with "and" (see MPEP § 2173.05(h), I).

Art Unit: 1754

Appropriate correction of the above is required.

***Claim Rejections - 35 U.S.C. § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 18-52 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Said claims are considered vague, indefinite, and/or confusing, because in both independent claims 18 and 20, in both part (b) **and** part (d), "M" **and** "M' " are used. Thus, it is not clear if "M" as recited in these claims should refer to that earlier recited in parts (a) and (c), **or** if "M' " should be used consistently throughout parts (b) and (d). (Claims 19 and 21-52 have been included in this rejection, given they at least indirectly depend on either claim 18 or claim 20.) Appropriate correction is required.

6. Claims 20, 23, 26, 29, 32, 35, 38, 41, 44, 47 and 50 are further rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Said claims are considered further vague, indefinite, and/or confusing, because the balance of the "iron sulfide mixture" is not defined in independent claim 20. That is, with applicant's iron sulfide the only positively recited component, it is not clear with what else the "iron sulfide" is mixed. Rewriting "iron sulfide mixture" as "iron sulfide composition" in line 1 of claim 20, or, alternatively, inserting ", and at least one alkaline earth metal compound" after "an effective component" in line 2 of claim 20 would

Art Unit: 1754

overcome this rejection. (Claims 23, 26, 29, 32, 35, 38, 41, 44, 47 and 50 have been included in this rejection, given they at least indirectly depend on claim 20.) Appropriate correction is required.

7. Claims 36-37 and 51-52 are further rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Said claims are considered further vague, indefinite, and/or confusing, because the preamble of claims 36-37 and claims 51-52 recites a "method", whereas claims 21 and 22 (claims 36 and 51 ultimately dependent upon claim 21; claims 37 and 52 ultimately dependent upon claim 22) are drawn to **compositions** (i.e., the preamble of claims 21 and 22 recites a "heavy metal treating agent"). Thus, there is insufficient antecedent basis for such a "method" limitation in claims 36-37 and 51-52. Appropriate correction is required.

#### ***Allowable Subject Matter***

8. Claims 18-52 would be allowable if rewritten or amended to overcome **all** rejection(s) under 35 U.S.C. § 112, second paragraph, as set forth in paragraphs 5.-7. above.

9. The following is a statement of reasons for the indication of allowable subject matter: In accordance with the Examiner's Statement of Reasons For Allowance in the parent case (specifically, paper no. 8 of parent application 10/053,674), the references of record, including that newly cited with this action, do not teach nor would have suggested iron sulfides of the **very specific** structural formula required by all instant claims—namely, "iron sulfide... having a mackinawite structure which [,at the least,]

Art Unit: 1754

contains  $\text{FeM}_x\text{N}_y\text{S}_z$  wherein M represents an alkaline earth metal, N represents an alkali metal, and x, y and z, indicating the molar proportions of the respective elements, represent numbers satisfying  $0.01 < x \leq 0.5$ ,  $y \leq 0.2$  and  $0.7 \leq z \leq 1.4$ , as an essential component" (i.e., the broadest of applicant's structural formulae, as recited in part (a) of both independent claims 18 and 20). With respect to the newly cited English translation of JP 48-59005, although this reference generally suggests that "by adding metal powders such as alkaline-earth metal chemical compounds,... more activated ferric sulfide flocculants can be obtained" (see p. 8, 1<sup>st</sup> full paragraph) and exemplifies the addition of calcium hydroxide (see p. 10, "Referential Example 1"), there is no teaching nor suggestion of the **very specific** molar proportions required by all instant claims; this reference also fails to teach or to have suggested ferric sulfide flocculants "having a mackinawite structure" as required by all instant claims. Therefore, as no prior art of record teaches or would have suggested applicant's **very specific** iron sulfides, this prior art also fails to teach or to have suggested iron sulfide mixtures comprising such iron sulfides (per instant claims 18-19); heavy metal treating agents comprising such iron sulfides (per instant claims 20-22); and methods of treating heavy metals using such iron sulfides (per instant claims 23-52).

### **Conclusion**


10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. These references are considered cumulative to or less material than that discussed above and include those cited during prosecution of the parent application.


Art Unit: 1754

11. Any inquiry concerning this communication should be directed to Ardith E. Hertzog at telephone number is (571) 272-1347. The examiner can normally be reached on Monday through Friday (from about 8:00 a.m. to 4:30 p.m.).

12. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman, can be reached on (571) 272-1358. The fax phone number for the organization where this application is assigned is 703-872-9306.

13. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. For any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
AEH  
May 5, 2004

  
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